Video Clarity

Tools for Video Analysis

ClearView Installation Guide

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1 ClearView Video Analysis System

The ClearView Video Analysis system is a full-reference video quality analysis system that provides all the tools necessary for R&D laboratories, broadcasters, and transmission engineers to make deterministic measurements of video quality.

Capture Features:
The ClearView systems allow the capture of video content from virtually any source -- file, SDI, HD-SDI, DVI, VGA, HDMI, Component, Composite, and S-Video. Regardless of the input, the video is converted, based on user choice, to fully uncompressed 4:2:2 Y'CbCr, 4:4:4 RGB, ARGB, or RGBA. Any inputted video sequence, regardless of dimensions, can be cropped or matted to fit into the selected output raster.

Analysis Features:
Analysis begins on any two video sequences which share the same resolution and color space. The goal is to calculate the video quality without human intervention – termed objective analysis. ClearView calculates the pixel differences between the video sequences and displays them as A-B with thresholding and add-back. Add-back shows where pixels are greater than the threshold. Without Add-back shows the actual value of the pixel differences. The Pixel Value tool shows the Y'CbCr or RGB values at the pixel location for each video sequence.

ClearView applies various objective metrics to each frame of the video sequences, generates graphs, and logs the results. The current objective metrics supported include PSNR, SPATIAL, and TEMPORAL as defined by ITU-T P.910. While development of more advanced algorithms are ongoing, ClearView offers subjective viewing modes with objective measurements.

ClearView can easily be programmed to display video sequences for the expert viewers; while recording the objective metric score. While the Mean Objective Score (MOS) cannot be repeated, the objective metric can be easily and readily.

To aid in subjective video analysis, ClearView displays the video sequences at any rate in side-by-side, seamless split, or split mirror.

Playout Features:
Output rates are independent from input rates; so any video sequence can be outputted at rates in excess of 120Hz. The user has control over shuttle rates, jog, color look-up tables, zoom/pan, and field display. The video sequences are previewed within the ClearView Interface and sent to HD-SDI, SDI, Component, S-Video, Composite, DVI, VGA, and HDMI. Normally, the video sequences are shown on the same display, but using the Broadcast I/O DL module, each video sequence can be outputted via a separate HD-SDI/SDI link. Video Sequence or a portion of the video sequence can also be exported as uncompressed BMP, RAW or AVI files.

2 Inside the Package

The ClearView product line contains 4 different models:

- ClearView Shuttle Broadcast
- ClearView Shuttle DV
- ClearView Classic
- ClearView Extreme

What is inside the package depends somewhat on what you purchased. Generically, you have the following items:

- Keyboard and Mouse – the batteries and CDs are included and the drivers have already been loaded
- AC Power – The power supply auto-senses the correct country power. We include a power cable based on US standards.
- DVI to VGA adapters

Other items that may be in the package include:

- DVI Cables - If you have purchased a DVI input or DVI output module
- Broadcast I/O Cables – If you have purchased a Broadcast I/O module
- DVB-ASI Cables – If you have purchased a DVB-ASI I/O module
- Gefen Adapter – If you have purchased the DVI input 1080P option
- AJA Component to HD-SDI Adapter – If you have specifically purchased this

3 Software Installed

When shipped, ClearView has the latest Windows updates, drivers for all of the hardware modules, all of the licenses installed, and it is ready to use.

3.1 Username and Password

ClearView is shipped without a username/password. It is strongly advised that you setup users and passwords to guard against unwanted use. The ClearView application must have super-user/Administrator privileges so all users must have these access rights.

3.2 Network Interfaces

ClearView includes one or two Gigabit Network Interfaces for connecting to your network. The interfaces are shipped configured for DHCP.

3.3 Anti-Virus Software

No anti-virus software has been installed on this system. It is highly recommended that you install your corporate anti-virus software and any other protective software advised by your company.

3.4 Windows Updates

The system is configured to perform automatic updates from the Windows website. It is recommended that you connect the system to the internet from time to time to allow these updates to occur. Or, if your company has some other update policy, you should implement that. Video Clarity highly recommends keeping your computer up to date with all of the latest patches from Microsoft updates.

4 Unpacking ClearView

Prior to connecting the Video I/O cables (with the exception of your Windows Desktop Display), you should first power up the system to make sure that it arrived intact.

After updating ClearView with any corporate IT required software, launch the ClearView icon on the desktop. If you receive an error message, you have made a change to the machine ID. This is ok. You simply need to copy the new machine name into an email, and send it to authorization@videoclarity.com. Detailed instructions for doing this are listed in the Licenses section.

After checking that everything is in working order, shut the system down, and connect all of the necessary Video I/O. Information on the various module I/Os can be found in the Hardware Modules section.

Note: Due to DVI EDID specifications, the desired DVI monitor must be connected to ClearView's DVI Output at power-on time.

5 Windows Desktop Display

If you have purchased the DVI Output module, connect a DVI or VGA display to the lower connector

Note: A DVI to VGA converter is shipped with the unit

If you have not purchased the DVI Output module, connect a VGA display to the VGA connector next to the Ethernet ports.

Note: to differentiate the DVI Output Module from the DVI Input Module, look for the S-video connector. This is the DVI Output Module. This output is not supported but is useful for finding the proper card.

6 Licenses

ClearView has 2 licenses:

- ClearView license, which enables the various hardware modules
- 3rd-party Drastic license for various file imports

ClearView was shipped fully licensed; however, changes such as machine ID, user name, firewall settings, etc. may require a refresh of the licenses.

Note: if you have a dual-boot machine (Windows XP Professional 32-bit and Windows XP Professional 64-bit), then you will need to do the following procedures 2 times – one for each operating system.

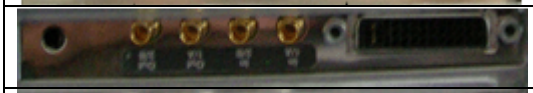
After putting your machine on the network and updating the firewall, security settings,

- Double click on the ClearView icon
- If you receive a License Error, then
    - Select Start -> Programs -> Video Clarity -> ClearView Licenser.
    - A popup will appear which is named ClearView Licenser. Please copy the entire text from the grey-out box, and mail it to authorization@videoclarity.com. *Note: the text should look like "Version VX.X User XXXXXXXXXXX (WinNT VX.X [Build XXXX] 0)".*
    - Go to <C>:\Program Files\Drastic\MediaReactor if running in Windows 32bit. *Note: The root drive may not be <C:>, and in 64 bit mode Program Files is Program Files (x86).*
    - Select/Run DTMRLicense.exe
    - Place either your or the primary users email and name in the first 2 boxes.
    - Press Generate and the Site Code will appear
    - Copy the Site Code, and mail it to authorization@videoclarity.com

It is possible that the ClearView license is correct, but the 3rd-party Drastic license needs to be refreshed. To check this:

- Double click on the ClearView icon
- Launch Windows Explorer
- Choose the CV Media Drive (probably the E: drive)
- Choose Clips
- Choose BMPs
- Choose SportsBMP
- Drag Sports80030.bmp onto the ClearView Desktop
- Press Load in the File Import Pane
- If you get a MediaRead License Error then
    - Go to <C>:\Program Files\Drastic\MediaReactor if running in Windows 32bit. *Note: The root drive may not be <C:>, and in 64 bit mode Program Files is Program Files (x86).*
    - Select/Run DTMRLicense.exe
    - Place either your or the primary users email and name in the first 2 boxes.
    - Press Generate and the Site Code will appear
    - Copy the Site Code, and mail it to authorization@videoclarity.com

7 Hardware Modules

	CV-DVI-Output
	DVI/VGA Input
	CV-Broadcast-DL I/O
	CV-Broadcast-AD I/O
	DVB-ASI I/O

Two Broadcast modules exist. The basic differences are highlighted in the table below. For detailed differences, please refer to the User Guide.

	CV-Broadcast-DL	CV-Broadcast-AD
Simultaneous Video Capture and Server	**x**	
Support up to 1080P and 2K resolutions	**x**	
Dual Outputs	**x**	
Analog Inputs		**x**

7.1 CV-Broadcast-DL Module

This module supports resolutions up to 2K using dual-link HD-SDI. It supports HD-SDI, SDI, Component, S-Video, and Composite output and HD-SDI and SDI input.

Break-out Cable

SDI #1 In
SDI #2 In
SDI #1 Output
SDI #2 Output

7.2 CV-Broadcast-AD Module

This module supports up to 1080i/720P resolution. It supports HD-SDI, SDI, Component, S-Video, and Composite I/Os.

7.3 CV-DVI-Output Module

The DVI/VGA Output Module consists of a Dual-output DVI/VGA card. The primary output is the Windows Desktop and the ClearView User Interface. The secondary output is a dedicated, video-only output controlled by ClearView. When ClearView is not running, the output should be an extension of the Windows desktop.

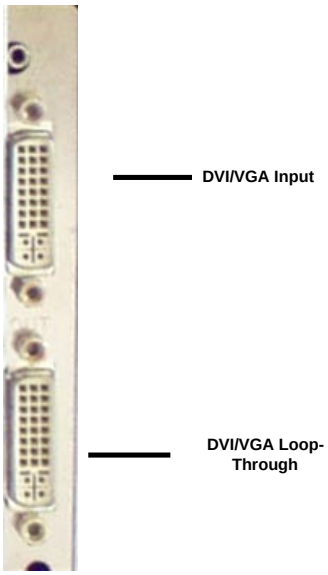
Note: To send to a VGA monitor, use one of the included DVI/VGA adapters.

7.4 CV-DVI-I-720 Module

The model -720 has a single DVI Input connector and a single DVI pass-through connector. If your source device looks for a monitor's EDID, you must have a DVI monitor attached to the pass-through connector which is capable of displaying the video format you would like to capture.

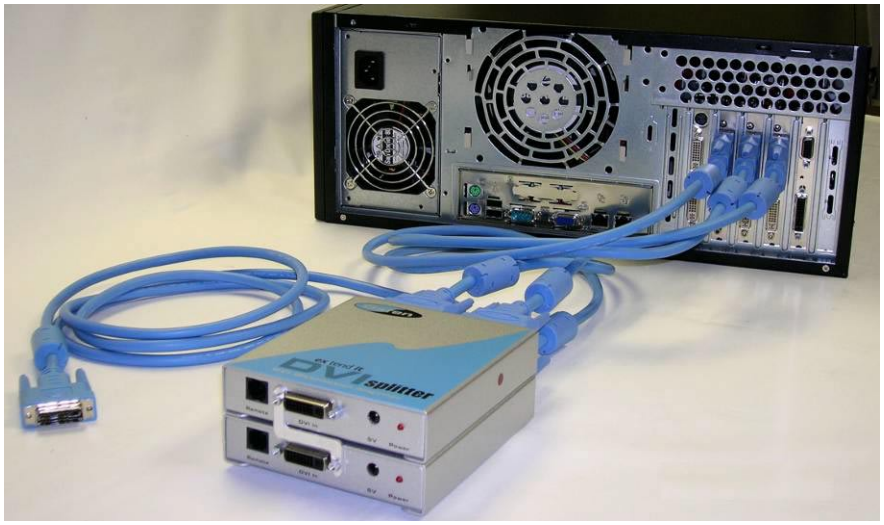
Note: unless you have the CV-DVI-Output module installed. In this case, you can attach the monitor to output #2).

Note2: To capture VGA analog video, use one of the included DVI/VGA adapters.



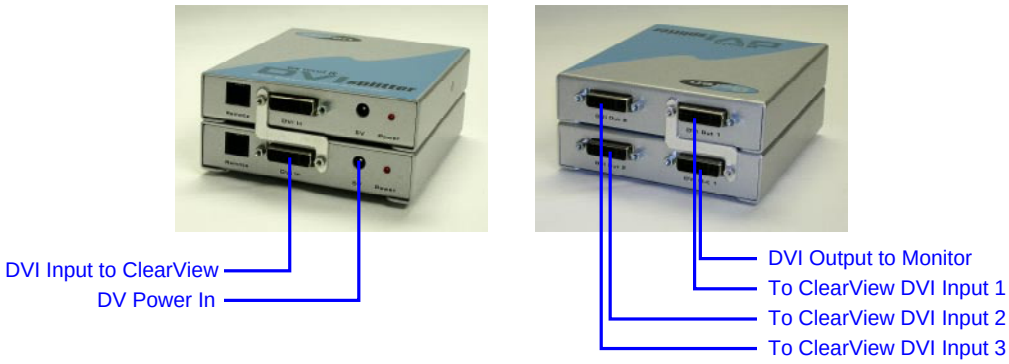
7.5 CV-DVI-I-1080 Module

The –1080 DVI Input Module actually consists of three physical DVI capture cards. Each card captures one of the three DVI components (Red, Green, and Blue). The three streams are then combined into a single 32 bit ARGB video sequence, in a separate export process after the capture.



ClearView DVI-I-1080 Input Module including cables and DVI Distribution Amp.

The DVI Distribution Amplifier (from Gefen) takes the incoming DVI signal and sends it to all three DVI capture cards. It also sends the signal to a DVI monitor for viewing the capture process.


DVI Input to ClearView
DV Power In
DVI Output to Monitor
To ClearView DVI Input 1
To ClearView DVI Input 2
To ClearView DVI Input 3

Nearly all DVI video sources detect the display device and restrict the sources outputs based on what the display will accept. This standard is known as EDID (Electronic Device Interface Definition). In order to capture DVI video from most sources, you will need to have a monitor connected to Output number one on the DVI Distribution Amp which supports the desired video format. The DVI Distribution Amp looks to Output Number one (bottom right) for the EDID information which is then passed back to the DVI source.

7.5.1 Connections:

Connect all DVI cable prior to powering on the DVI Distribution Amp.
DVI Output number one (1), located at the bottom right, must be connected to a DVI monitor capable of supporting the video format to be captured.

The other three outputs connect to each of the three DVI Input Module's connectors. It does not matter which goes to which.

- Power on the Monitor
- Power on the DVI Distribution Amp
- Power on ClearView
- Power on the DVI source

The source should now read the EDID info from the monitor, through the DVI Distribution Amp.

7.6 DVB/ASI Input/Output Module

This module resides in a single card and allows for simultaneous input and output of DVB/ASI (Asynchronous Parallel Interface). Use Low-Loss Serial Digital video cables for all connections to other DVB/ASI compliant devices.